

AMENDMENTS TO THE CLAIMS

The following listing of claims will replace all prior versions and listings of claims in the application.

LISTING OF CLAIMS

1. (Currently amended) A welding apparatus for welding an element to a component, the apparatus comprising:

a) a hand held welding gun including an element holder, an electromagnetic actuator operably advancing the holder, and a pneumatic element feeding hose;

b) a welding gauge fixed to the component, the gauge having a component-facing surface which is three-dimensionally contoured, and the gauge includes at least one receptacle and at least one through-hole; and

c) an elongated pin positioner attached to the gun and extending substantially parallel to an advancing direction of the holder, ~~the positioner having a generally substantially flat bottom surface;~~

wherein the pin positioner maintains a known distance between the element and the component, when the pin positioner is in physical contact with the receptacle of the gauge; and

the holder operably advancing and assisting in welding the element to the component.

2. (Previously presented) The apparatus of Claim 1, wherein the element is a metal stud and the component is a metal sheet, and the gauge has an offset section to engage a curved surface of the sheet.

3. (Previously presented) The apparatus of Claim 1, wherein the element is a metal weld stud and the component is a metal sheet of a motor vehicle, and the weld stud is stroke ignition, drawn arc-welded onto the sheet.

4. (Currently amended) The apparatus of Claim 1, wherein the elongated pin ~~positioner~~ operably positions the element perpendicular to the component.

5. (Previously presented) The apparatus of Claim 4, wherein the gauge includes a hole through which the element and the holder extend, the hole being at least twice as wide as the holder.

6. (Previously presented) The apparatus of Claim 1, wherein depth of the gauge is adjustable.

7. (Cancelled).

8. (Previously presented) The apparatus of Claim 1, further comprising a threaded adjustment member attached to the gauge, the member contacting the component.

9. (Currently amended) The apparatus of Claim 1, further comprising a second pin directly contacting the gauge positioner, ~~wherein the positioners are elongated, rod-like pins.~~

10. (Cancelled).

11. (Currently amended) The apparatus of Claim 1, wherein the pin contacts against an adjustable threaded stop attached to the gauge positioner ~~is inserted into a hole in the gauge.~~

12. (Currently amended) The apparatus of Claim 1, further comprising at least three of the pins extending from the welder and contacting the gauge positioners.

13. (Previously presented) The apparatus of Claim 1, wherein the gauge is a plastic material.

14. (Currently amended) The apparatus of Claim 12, wherein the pins ~~positioners~~ are placed in a triangle pattern around the element.

15. (Currently amended) A welding system for joining a piece to a part, the system comprising:

- a) a hand welder operably welding the piece to the part;
- b) a holder operably holding the element relative to the part;

c) [[a]] an elongated and substantially straight positioner offset relative to the holder and being attached to the welder; and

d) a welding gauge coupled to the part when the positioner is in contact with the gauge, the gauge including a through-hole operably receiving the holder, the gauge further including a receiver having a bottom operably directly contacting the positioner, the receiver being adjacent the hole.

16. (Previously presented) The apparatus of Claim 15, wherein the piece is a metal stud and the part is a metal sheet, and the gauge is three dimensionally contoured to engage a curved surface of the sheet.

17. (Original) The apparatus of Claim 16, wherein the metal stud and the metal sheet are parts of a motor vehicle.

18. (Original) The apparatus of Claim 15, further comprising an alignment feature in the welding gauge.

19. (Previously presented) The apparatus of Claim 15, further comprising a threaded member extending between the gauge and the part.

20. (Previously presented) The apparatus of Claim 19, wherein the threaded member allows the depth of the hole of the gauge to be adjustable relative to the part.

21. (Currently amended) The apparatus of Claim 15, wherein the positioner is a pin, ~~which is longer than the holder of the welder~~ projecting beyond an end of the pin facing the part.

22. (Currently amended) The apparatus of Claim 15, wherein there are the gauge has at least three of the positioners disengagably coupling the welder to the gauge.

23. (Currently amended) The apparatus of Claim 15, further comprising a second positioner, wherein the positioners are elongated, rod-like pins disengagably coupling the welder to the gauge.

24. (Previously presented) The apparatus of Claim 15, wherein the hole in the gauge has a rectangular peripheral shape.

25. (Previously presented) The apparatus of Claim 15, further comprising a second receiver, with a bottom, mating with a second elongated positioner extending from the welder substantially parallel to the first positioner and the holder.

26. (Currently amended) The apparatus of Claim 15, further comprising an adjustable stop attached to the gauge ~~at least three positioners.~~

27. (Previously presented) The apparatus of Claim 15, wherein the gauge is a plastic material.

28. (Previously presented) The apparatus of Claim 26, wherein the positioners are placed in a triangle pattern around the holder.

29. (Currently amended) A process including a welding gauge to weld an element to a component using a hand held welder, the process comprising:

- a) attaching the welding gauge to the component;
 - b) positioning the hand held welder in the welding gauge having a receiver with a bottom and contacting an elongated pin extending from the welder against the bottom;
 - c) holding the element in the welder at a known distance from the component;
 - d) contacting the element against the component through a hole in the gauge;
 - e) turning on a pilot current;
 - f) lifting the element away from the component to create an electric arc;
 - g) turning on a welding current;
 - h) lowering the element onto the component to mingle the molten material;
- and
- i) solidifying the combined molten material to weld the element to the component at a curved surface of the component.

30. (Currently amended) The process of Claim 29, wherein the element is a metal stud and the component is a metal sheet, further comprising engaging the [[a]] curved surface of the sheet with a three dimensionally contoured section of the gauge.

31. (Original) The process of Claim 30, wherein the metal stud and the metal sheet are parts of a motor vehicle.

32. (Currently amended) The process of Claim 29, further comprising removably inserting an end of the pin ~~an elongated positioner~~ into a mostly enclosed receiver of the welding gauge.

33. (Previously presented) The process of Claim 32, wherein the gauge includes a hole through which the element and an element holder of the welder extends, the hole being at least twice as wide as the holder.

34. (Previously presented) The process of Claim 33, further comprising adjusting the depth of the gauge.

35. (Currently amended) The process of Claim 32, wherein ~~the positioner is a pin which is longer than~~ an element-holder of the welder extends further toward the component than the substantially parallel pin.

36. (Currently amended) The process of Claim 32, further comprising engaging wherein the gauge has at least three pins between the welder and the gauge gauge-positioners.

37. (Previously presented) The process of Claim 29, further comprising aligning a combination of holes and elongated, rod-like pins.

38. (Previously presented) The process of Claim 29, further comprising adjusting the distance of a portion of the gauge relative to the component in a repeatable manner.

39. (Previously presented) The process of Claim 29, further comprising adjusting a threaded member attached to the gauge, the member contacting the component.

40. (Cancelled).

41. (Previously presented) The process of Claim 29, further comprising making the gauge from a plastic material.

42. (Currently amended) The process of Claim 29 ~~[[36]]~~, further comprising placing multiples of the pin positioners in a triangle pattern around the element.

43. (Cancelled).

44. (Currently amended) A stud welding apparatus comprising:

- a) a stud welder;
- b) a gauge including at least one through-hole ~~with a bottom member~~ operably aligned with the welder;
- c) at least one elongated positioner extending between and operably positioning the welder relative to the gauge, the gauge being disengaged from the welder after welding, ~~the positioner being inserted into the at least one through-hole and resting on the bottom member;~~ and
- d) at least one adjustable member ~~including a section~~ attached to the gauge and ~~a workpiece-contacting end~~ extending from a side of the gauge substantially opposite the positioner, an end of the positioner directly contacting against the adjustable member.

45. (Previously presented) The apparatus of Claim 44, wherein the adjustable member is externally threaded, the welder is a hand-held welding gun, and the gauge is disengagable from the welder without requiring loosening of any fasteners.

46. (New) The apparatus of Claim 44, further comprising at least a second elongated positioner directly contacting against both the welder and the gauge.

47. (New) The apparatus of Claim 44, wherein the positioner is an elongated pin extending parallel to a stud-holder of the welder and the holder has a distal end extending further than a distal end of the pin.

48. (New) The apparatus of Claim 44, wherein the gauge includes a receptacle that operably receives a distal end of the positioner.

49. (New) The apparatus of Claim 48, wherein the adjustable member is at least partially located within the receptacle of the gauge.

50. (New) The apparatus of Claim 44, wherein the stud welder is an arc welder including an electromagnetic actuator operably moving a stud-holder.

51. (New) The apparatus of Claim 44, further comprising a pneumatic stud feeder line coupled to the welder.